Contents

Specification		**2**
Dimensions		
	Parts List	**3-4**
Installation:		
	Requirements	**4-7**
	Positioning	**8**
	Plumbing	**8-9**
	Electrical	**9-12**
	Commissioning	**12-13**
Maintenance		
	Precautions	**13**
	Schedule	**14**
	Fault Finding	**14-15**
	Draining	**15**
	De-Installation	**15**
Warranty		**16**

Installation must only be undertaken by a competent person holding a current Registered Operative Identity card for the installation of unvented domestic hot water storage systems issued by an accredited body.

The Zip Aquaflo must be installed in accordance with these instructions and all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the time of installation.

Specification

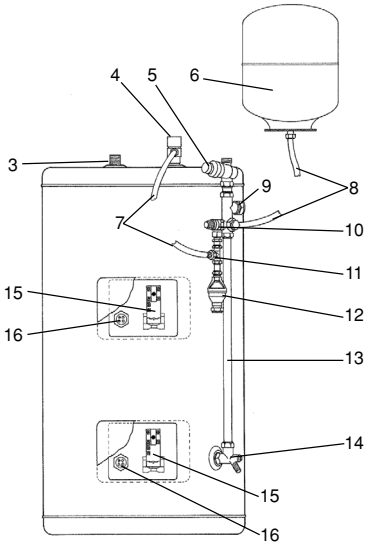
Product:	Zip Aquaflo		
Type:	Direct unvented and indirect unvented		
Capacity:	150 ltr, 200 ltr, 250 ltr		
Loading:	Direct - 2 x 3kW, one high level, one low level Indirect - 1 x 3kW low level		
Heat Exchanger:	Indirect - 25mm high efficiency coil		
Thermostat:	Adjustable 45° to 75°C		
Thermal cut-out:	Manually resettable set to 85°C		
Water vessel:	Stainless steel tested to 16 bar Maximum working pressure 5.5 bar		
Insulation:	High performance insulation		
Controls:	Pressure reducing valve and line strainer set to 3.5 bar Expansion relief and single check valve set to 6 bar Pressure and temperature relief valve set to 7 bar and 90°C External expansion vessel pre-charged to 3.5 bar, capacity 19 ltr sizes 150, 200; 24ltr size 250		
Approvals:	CE endorsed, LVD, EMC and WRAS approved		
Models:	150 litre	Direct AF1150	Indirect AF2150
	200 litre	Direct AF1200	Indirect AF2200
	250 litre	Direct AF1250	Indirect AF2250
Heat up time: (15° to 65°C)		Direct	Indirect
	150 litre	77 mins	45 mins
	200 litre	80 mins	39 mins
	250 litre	86 mins	51 mins
Re-heat time: (70% volume)		Direct	Indirect
	150 litre	60 mins	34 mins
	200 litre	68 mins	31 mins
	250 litre	75 mins	41 mins

Performance data quoted is by manufacturer's test.
For WRAS approved data see inside back cover.

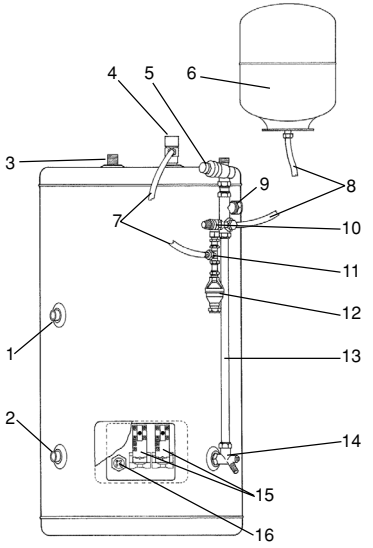
Dimensions

Aquaflo	Capacity (litres)	Type	Height (mm)	Diameter (mm)	Weight Empty (kg)	Weight Full (kg)
AF1150	158	Direct	895	580	31	187
AF1200	189	Direct	1070	580	36	225
AF1250	238	Direct	1305	580	45	278
AF2150	158	Indirect	895	580	33	186
AF2200	189	Indirect	1070	580	38	224
AF2250	238	Indirect	1305	580	47	279

DIRECT



INDIRECT



Parts List

1 Primary return connection 3/4" BSPF	9 Balanced cold water take off
2 Primary flow connection 3/4" BSPF	10 Expansion relief and check valve
3 Hot water outlet	11 Swept Tee piece
4 Pressure and temperature relief valve	12 Tundish
5 Combined strainer and pressure reducing valve	13 Cold water supply tube
6 Expansion vessel	14 22mm elbow and drain
7 15mm copper tube	15 Immersion heater/cylinder thermostats
8 15mm copper tube	16 Immersion heater

The Zip Aquaflo hot water cylinder will be delivered in its carton with the various control valves and fittings supplied in a seperate carton. Both should be left packed until needed.

Factory Fitted Components

- Immersion heater(s)
- Thermostats with over temperature cut-outs
- Pressure and temperature relief valve

Components supplied with the unit for site fitting

- Inlet manifold assembly comprising pressure reducing valve with integral line strainer and expansion relief valve with check valve and balanced cold water take off.
- Expansion vessel
- Tundish
- 15 x 15 x 15 swept Tee piece
- 22 x 22 draw-off elbow with drain
- Spring return motorised valve (indirect units only)

Installation

Requirements

General

Prior to installation the Zip Aquaflo should be kept upright in its original packaging and handled with care always lifting from underneath.

The Zip Aquaflo should be stored in a covered, dry area protected at all times from the weather.

These instructions must be read and fully understood before commencing the installation. If in doubt, or in need of further guidance please ring Zip on 0870 6088888.

Installation must only be undertaken by a competent person holding a current Registered Operative Identity card for the installation of unvented domestic hot water storage systems issued by an accredited body.

The Zip Aquaflo must be installed in accordance with these instructions and all current legislation, codes of practice and regulations governing the installation of unvented hot water cylinders in force at the time of installation.

All connections should be made to the Zip Aquaflo and its safety devices using the 15mm or 22mm compression fittings, nuts and olives supplied.
The electrical installation including earthing and cross bonding must comply with the current IEE regulations and any Local Authority requirements.

The cold water feed manifold assembly comprises a pressure reducing valve with integral strainer, expansion relief and check valve, factory fitted pressure and temperature relief valve and expansion vessel. All of these components must be included in the installation. The pressure settings on these components are factory set and indicated on the top of the valve. Do not break any seals or attempt to adjust any safety valve; to do so may impair the safety of the installation and will invalidate the warranty.

It is recommended that the unit is installed according to these instructions. Under no circumstances should the expansion relief valve be installed in an inverted position as fouling of the seat caused by deposits may prevent it from operating correctly.

Safety relief valve connections should not be used for any other purpose and no valve should be fitted between the expansion relief valve and the storage cylinder.

The boiler or any other heating appliance to be used for feeding indirect units should be under effective thermostatic control and fitted with suitable over-temperature safety cut-out device to isolate it in the event of failure.

An isolating valve must be fitted to the cold water supply to the inlet manifold.

The Zip Aquaflo is designed for use with a supply pressure up to 12 bar. For supply pressures exceeding 12 bar an additional pressure reducing valve must be fitted in the cold water supply to the unit.

Secondary Circulation

A secondary circulation system may be connected to the cold water supply tube (13) using 22mm tube to a swept Tee connection (not supplied).

The secondary return pipe should incorporate a check valve to prevent backflow and a suitable WRAS approved circulation pump.

On large systems, it may be necessary to fit an additional expansion vessel to the secondary circuit due to the increase in system water content.

Secondary circulation should only be used on indirect units.

Discharge

The tundish should be installed in a visible location and away from any electrical devices.
The discharge pipe from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge, be of metal and:

a) Be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long. Discharge pipes between 9m and 18m equivalent resistance length should be at least 2 sizes larger than the nominal outlet size of the safety device, between 18 and 27m at least 3 sizes larger, and so on. Bends must be taken into account in calculating the flow resistance. See diagram of typical discharge pipe arrangement and table for sizing copper discharge pipe.

b) Have a vertical section of pipe at least 300mm long, below the tundish before any elbows or bends in the pipework.

c) Be installed with a continuous fall.

d) Have discharges visible at both the tundish and the final point of discharge but where this is not possible or it is practically difficult there should be clear visibility at one or other of these locations. Examples of acceptable discharge arrangements are:

1. Ideally below a fixed grating and above the water seal in a trapped gully.

2. Downward discharges at a low level: i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that where children may play or otherwise come into contact with discharges, a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility.

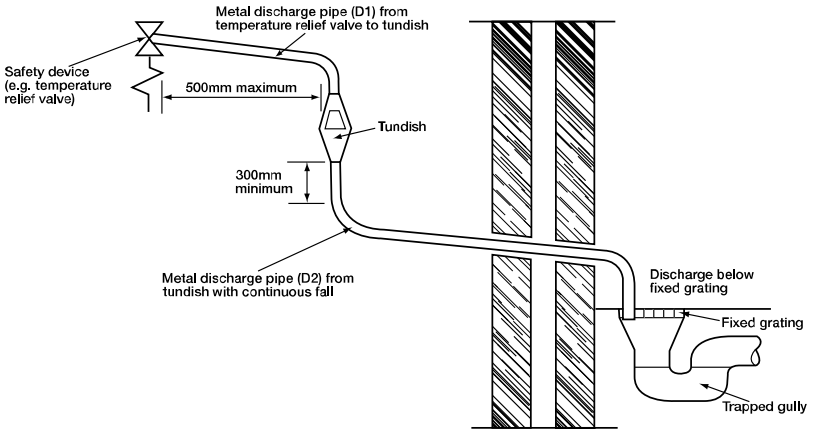
3. Discharges at high level: e.g. into metal hopper and metal down-pipe with the end of the discharge pipe clearly visible (tundish visible or not) or onto a roof capable of withstanding high temperature discharges of water and 3m from any plastic guttering system that would collect such discharges (tundish visible).

4. Where a single pipe serves a number of discharges, such as in blocks of flats, the number served should be limited to not more than 6 systems so that any installation can be traced reasonably easily. The single common discharge pipe should be at least one pipe size larger than the largest

individual discharge pipe to be connected. If unvented hot water storage systems are installed where discharges from safety devices may not be apparent e.g. in dwellings occupied by blind, infirm or disabled people, consideration should be given to the installation of an electronically operated device to warn when discharge takes place.

Note: The discharge will consist of scalding water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

Typical discharge pipe arrangement


Metal discharge pipe (D1) from temperature relief valve to tundish
Safety device (e.g. temperature relief valve)
500mm maximum
Tundish
300mm minimum
Metal discharge pipe (D2) from tundish with continuous fall
Discharge below fixed grating
Fixed grating
Trapped gully

Sizing of copper discharge pipe 'D2' for common temperature relief valve outlet sizes

Valve outlet size	Minimum size of discharge pipe D1	Minimum size of discharge pipe D2 from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
G1/2	15mm	22mm 28mm 35mm	up to 9m up to 18m up to 27m	0.8m 1.0m 1.4m
G3/4	22mm	28mm 35mm 42mm	up to 9m up to 18m up to 27m	1.0m 1.4m 1.7m
G 1	28mm	35mm 42mm 54mm	up to 9m up to 18m up to 27m	1.4m 1.7m 2.3m

Positioning

The Zip Aquaflo must be installed vertically with the electrical cover panel to the front of the unit.

The unit can either be placed directly on the floor or supported on the optional mounting feet.

Ensure that the floor is sufficiently strong to support the full weight of the unit (see dimensions).

Position the Zip Aquaflo to allow for provision of the cold water supply, discharge fittings and pipework as well as access for future maintenance, repair of the unit or its replacement.

The expansion vessel should be securely fitted to a suitable and convenient wall using the fittings supplied and positioned to enable its connection to the manifold assembly.

Do not install in a location where the unit or connecting pipework can freeze.

When deciding the final location of the heater consideration should be given to the safe and visible disposal of any water resulting from leaks or seepage. This is particularly relevant when the heater is located in a roof space, cupboard or any concealed location. For guidance please ring Zip Heaters on 0870 6088888.

Plumbing

1. The unit should be provided with a continuous cold water supply via 22mm pipework.
2. Fit the 22mm x 22mm draw-off elbow to the cold water inlet connection on the heater so that the fitting is vertical ensuring that the drain valve is closed.
3. Fit a section of 22mm copper tube to the draw-off elbow of the following length;
   150 litre unit length = 544mm
   200 litre unit length = 700mm
   250 litre unit length = 940mm
4. Fit the cold water feed manifold assembly to the 22mm tube with the valve caps facing forwards and in the correct direction of flow indicated by the arrows.
5. The pressure gauge connection point on the manifold assembly should be accessible for connection of a pressure gauge if necessary.

6. Connect the swept Tee piece to the expansion relief valve drain connection using a 45mm length of 15mm copper tube so that the swept bend drains downwards.
7. Connect the P&T relief valve to the swept connection of the Tee piece using 15mm copper tube.
8. Fit the tundish to the Tee piece using a short length of 15mm copper tube (approx. 50mm)
9. Connect the expansion vessel to the manifold assembly using 15mm copper tube.
10. A balanced mains pressure cold water supply for a shower may be provided from the connection provided on the manifold assembly, otherwise this should be blanked. **NB This connection should not be used to supply cold taps.**
11. Flush all pipe work thoroughly before making the final connections from the cold supply to the manifold assembly to ensure that any debris is removed. Failure to do this may result in irreparable damage to the controls and will invalidate the warranty.
12. Connect the hot water supply pipe to the outlet from the heater.
13. Connect the discharge pipe from the tundish. Refer to Installation Requirements.

Indirect Units only

14. Make the boiler primary flow and return connections to the 3/4" BSP female fittings on the heater.
15. Install the motorised valve into the 22mm primary flow pipework. For electrical connection of the motorised valve and immersion heater see electrical installation instructions for indirect units.

Electrical

Switch off the mains electrical supply before removing the electrical cover panel(s) or carrying out any work involving a live circuit or access to components that may be live.

Do not switch on the electrical supply until the unit is full of water.

This appliance must be earthed

Direct Units

All direct units are fitted with one immersion heater at low level and one at high level. Wiring instructions for the immersion heaters are located on the reverse of the

electrical cover panel. Follow the wiring instructions making the live, neutral and earth connections as indicated.

The electrical connection to the immersion heaters must conform to current IEE wiring regulations and be permanently connected to the electrical supply through a double-pole isolating switch with at least 3mm contact separation in each pole.

All internal wiring is factory mounted. Each immersion heater has a working thermostat adjustable between 45 and 75 degrees C. An over temperature cut-out is incorporated within the thermostat and will operate at 85 degrees C. Should this happen, press the reset button.

Important: Before resetting the over temperature cut-out or altering the thermostat setting, isolate the electrical supply to the unit before removing the electrical cover panel. Ensure that the cover panel is replaced correctly and the retaining screws fitted before re-connecting the electrical supply.

The lower immersion heater should be connected to the off peak supply (if available) whilst the higher immersion heater can be connected to the day tariff.

Indirect Units

All indirect units are fitted with one immersion heater at low level.

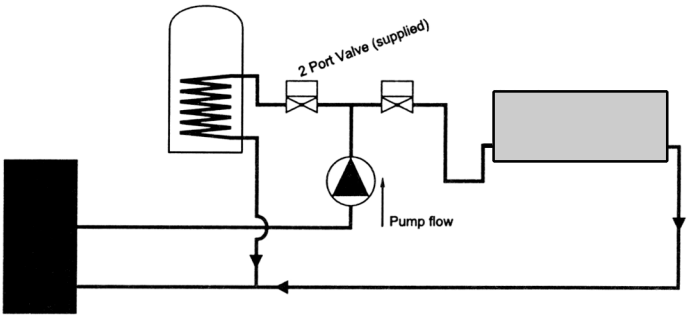
To comply with regulations governing the installation of indirect unvented water heaters, a motorised valve must be fitted in the primary flow to the unit. A two port motorised valve is supplied with the Zip Aquaflo to act as a positive energy cut-out should the over temperature cut-out operate.

The unit should be installed on an “S” or “Y” plan system and all electrical connections must conform to current IEE wiring regulations.

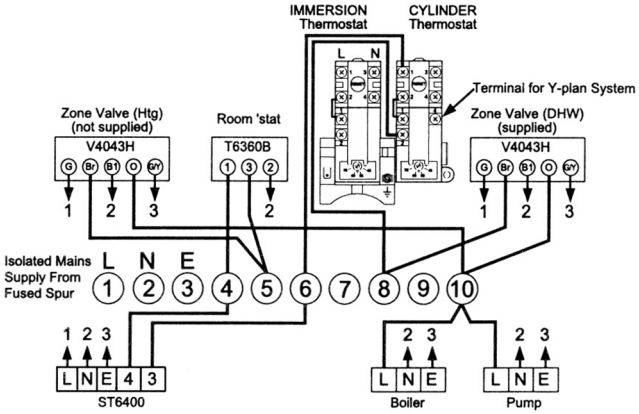
The working thermostat which controls the temperature of the domestic hot water is adjustable between 45 and 75 degrees C. An over temperature cut-out is incorporated within the thermostat and will operate at 85 degrees C. Should the over temperature cut-out operate, the motorised valve will also operate and isolate the primary flow to the cylinder. Press the reset button to reset the over temperature cut-out and the motorised valve.

Important: Before resetting the over temperature cut-out or altering the thermostat setting, isolate the electrical supply to the unit before removing the electrical cover panel. Ensure that the cover panel is replaced correctly and the retaining screws fitted before re-connecting the electrical supply. Zip cannot be held responsible if alternative wiring plans are used.

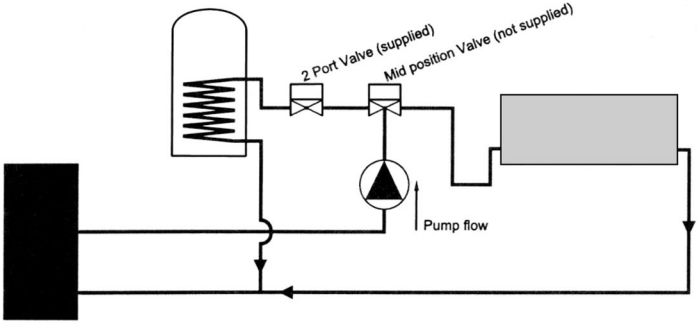
S Plan System Diagram



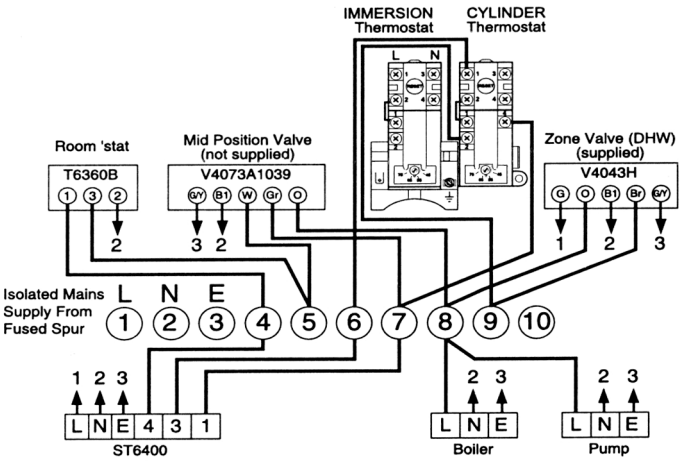
S Plan Wiring Layout



Y Plan System Diagram



Y Plan Wiring Layout



Commissioning

1. Check that all the requirements under “Installation Requirements” have been met.
2. Check that all water and electrical connections are correct and tight
3. Check that the expansion vessel pressure is correct - refer to label on vessel for correct pressure
4. Check that the drain valve on the draw-off elbow at the cold water connection to the heater is closed
5. Open hot water taps
6. Open the cold water supply valve and permit the heater to fill
7. Leave hot taps open until all air has been purged from the system and water is flowing freely from all outlets
8. Check for leaks and rectify as necessary
9. Check the operation of the P&T relief valve
10. Manually operate Expansion Relief Valve to ensure free water flow through the discharge pipe by turning the knob to the left and holding in the open position
11. Set the thermostat(s) to the desired temperature setting
12. Switch on the electrical supply to the unit.
13. During the heating cycle no water should escape to waste from either the expansion relief or P&T relief valves

14. Allow the heater to reach the selected temperature then check the temperature and re-check water connections adjusting as necessary
15. Pass these instructions to the person responsible for the building management

Maintenance

Precautions

1. The Zip Aquaflo is an unvented electric water heater and a competent person, familiar with unvented systems, should carry out all servicing and maintenance
2. Do not remove the electrical cover panel whilst the unit is connected to the electrical supply
3. Do not reset the over temperature cut-out until the cause of its operation has been diagnosed and necessary repairs have been undertaken
4. Do not use the water heater if it is suspected of being frozen. Switch off the electrical supply if water ceases to flow and do not switch on again until a competent person has checked that it is safe to do so
5. The heater should be visually inspected regularly. This is particularly important if the heater is located in a cupboard, roof space or any other concealed location. If there is any sign of leaks or seepage the heater should be isolated from the water supply and disconnected from the energy source as well as the electrical mains supply until a competent person has investigated the cause.
6. Do not block or restrict the discharge from any safety valve
7. Do not tamper with any safety valve
8. If water discharges from any safety valve the unit should be disconnected from the energy source as well as the electrical mains supply. The water supply to the unit should remain turned on and a hot tap opened for some time to cool the appliance. A competent person familiar with unvented systems should be contacted to investigate the cause.
9. Please note that lime-scale deposits form more readily at higher temperatures. Damage or failures caused by the formation of lime-scale are specifically excluded under the terms of the warranty. To reduce lime-scale formation to a minimum the unit should always be operated at the lowest convenient temperature.
10. If the unit has been commissioned and is to be unused for more than two weeks it is recommended to turn off the cold supply and draw off several litres of water through a hot tap. **NB The cold supply must be re-opened prior to use.**

Schedule

It is recommended that all key components of the heater should be inspected on a regular basis, no greater than twelve monthly intervals, for continued safe and efficient operation. The inspection should be carried out by a competent person familiar with unvented systems and the components to be inspected should include the following:

1. Expansion relief valve. Check correct operation
2. P&T relief valve. Check for correct operation
3. Check expansion vessel pressure - refer to label on vessel for correct pressure
4. Inspect integral line strainer and clean as necessary
5. Check that the discharge pipework is free of any obstructions
6. Check that all electrical connections are tight

Fault Finding

NB All servicing and repairs must be undertaken by a competent person, familiar with unvented systems.

Fault	Possible Cause	Solution
Over temperature cut-out operates	The immersion heater thermostat or cylinder thermostat has failed The thermostat is set at too high a temperature	Reset. If the cut-out operates again isolate the unit and contact the installer. **NB Isolate the electrical supply before removing the electrical cover panel and ensure that the panel is correctly replaced and secured before reconnecting**
Regular, intermittent water discharge from the tundish	Loss of pressure from the expansion vessel Thermostat failure	Isolate the heating system and the mains cold water supply. Partly drain the unit. Recharge the expansion vessel to the specified pressure and recommission. Isolate the heating system and check thermal controls when discharge ceases. Replace thermostat if faulty.
Continuous water discharge from the tundish	Pressure reducing valve not operating correctly P&T relief valve not operating correctly Expansion relief valve not operating correctly	Check with pressure gauge and replace as necessary Check and replace if faulty Check and replace if faulty

Fault	Possible Cause	Solution
No water flow from hot taps	Cold water mains supply isolated	Restore mains supply to the heater
	Integral line strainer in pressure reducing valve has become blocked	Check and clean as necessary
	Pressure reducing valve incorrectly fitted	Refit correctly with arrows in direction of flow
Water from hot taps is cold	Immersion heaters not switched on	Check and switch on
	Immersion heater over temperature cut-out has operated	See fault “Over temperature cut-out operates” above
	Programmer set to central heating only or not switched on	Check and set to hot water
	Boiler not operating correctly	Check and refer to boiler manufacturer or installer
	Cylinder thermal cut-out has operated	See fault “Over temperature cut-out operates” above
	Motorised valve not operating correctly	Check wiring and plumbing connections to the motorised valve

Draining

To drain the unit:

1. Isolate the electrical supply
2. Isolate the boiler from indirect units
3. Isolate the mains cold water supply to the unit
4. Open a hot water tap
5. Open the drain valve on the draw off elbow and allow the unit to drain.

De-Installation

To de-install the heater

1. Switch off and disconnect the electrical supply
2. Close the mains water supply isolating valve
3. Drain the heater as described in “Draining”
4. Disconnect the cold water inlet connection from the manifold assembly
5. Disconnect the hot water supply pipe from the heater outlet
6. Disconnect the primary flow and return from the heater
7. Remove the heater

Warranty:

No quibble 10 year warranty on the stainless steel cylinder and 5 year warranty on all other components.

The Zip Aquaflo is precision built from the finest materials and should give many years of trouble free service. Subject to registration of the product within 60 days of installation, Zip Heaters (UK) Ltd warrants that should the stainless steel cylinder fail within 10 calendar years of installation or any other components fail within 5 calendar years of installation, that part will be replaced or repaired by Zip Heaters (UK) Ltd free of charge. This is providing that the failure is not due to misuse, abuse, condition of the water, frost, or failure to follow installation instructions. The only charges payable by the customer are the cost of removal, re-installation and cartage, should any component need to be returned for repair. This warranty does not cover damage resulting from non-operation or consequential damage to any goods, furnishings or property. Zip Heaters (UK) Ltdís liability will be limited to replacement or repair at the discretion of Zip Heaters (UK) Ltd. This warranty does not displace any statutory warranty in relation to Zip Aquaflo.

Remember - To register Zip Aquaflo and qualify for the special warranty is easy and doesnít cost a penny ñ just complete the warranty form and return it **FREEPOST** to Zip Heaters (UK) Ltd.

Zip Heaters (UK) Ltd
14/15 Bertie Ward Way
Rash's Green, Dereham, Norfolk
NR19 1TE
Telephone 0870 6088888
Telefax 01362 692448
www.zipheaters.co.uk